

### **REMARKS**

This communication is a full and timely response to the aforementioned final Office Action dated September 14, 2007. By this communication, claims 1-4, 6-8, 10-14 and 16 are amended, and claims 17 and 18 are added. Claims 5, 9 and 15 are not amended. Thus, claims 1-18 are pending in the application. Claims 1, 4 and 11 are independent.

Reconsideration of the application and withdrawal of the rejections of the claims are respectfully requested in view of the foregoing amendments and the following remarks.

#### **I. Interview**

Applicant thanks the Examiner for kindly conducting a personal interview with Applicant's undersigned representative on January 25, 2008. During the interview, Applicant's representative and the Examiner discussed features of exemplary embodiments disclosed in the present application in view of the disclosure of the applied reference and the Examiner's interpretation thereof. The Examiner's instructive comments were appreciated and beneficial to Applicant.

Independent claims 1, 4 and 11 have each been amended in view of the Examiner's comments during the interview.

#### **II. 35 U.S.C. § 102(b) Rejections**

Claims 1-8 and 10-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Provino et al. (U.S. 5,778,384).

Without acquiescing to this rejection, independent claims 1, 4 and 11 have each been amended to emphasize distinctions between the claimed invention and the applied reference. Accordingly, Applicant respectfully submits that the claimed invention is patentable over the applied reference for the following reasons.

##### **A. Independent Claim 1**

Claim 1 recites a virtual file system which provides mirroring and linking of two file systems. The virtual file system of claim 1 comprises means for mounting components of each of the two file systems on a single mount point constituting a single root directory for the components of both of the two file systems such that

each mounted component of one of the two file systems is linked together with and becomes a mirroring pair with a corresponding mounted component in the other one of the two file systems. Claim 1 also recites that each of the two file systems has an application interface data structure constituting a programming interface for management thereof and access thereto.

The system of claim 1 also comprises a virtual file system configured to manage the linking and mirroring of the corresponding mounted components of each of the two file systems. Claim 1 recites that the virtual file system includes a super application interface data structure containing an application interface data structure of the virtual file system, and the application interface data structures of each of the two file systems.

Provino (U.S. 5,778,384) discloses that a plurality of directories are mounted under a root directory. In particular, as shown in Figure 7, three sub-directories Dir 1, Dir 2 and Dir 3, which are each a distinct remote physical file system, are separately mounted under a root directory ROOT. Subdirectory Dir 1 is mounted to the root directory, subdirectory Dir 2 is mounted to subdirectory Dir 1, and subdirectory Dir 3 is mounted to subdirectory Dir 2, to form a directory tree 70. The directory tree 70 thus includes three distinct mount points, i.e., (1) mount point ROOT on which subdirectory Dir 1 is mounted, (2) mount point "SIBLING" on which subdirectory Dir 2 is mounted to subdirectory Dir 1, and (3) mount "SIBLING" on which subdirectory Dir 3 is mounted to subdirectory Dir 2.

The subdirectories Dir 2 and Dir 3 of Provino are linked to the ROOT mount point by virtue of their direct or indirect relationship with subdirectory Dir 1 mounted to the ROOT mount point, but the subdirectories Dir 2 and Dir 3 of Provino are not mounted to the ROOT mount point.

In contrast to Provino, claim 1 recites that components of each of the two file systems are mounted on a single mount point constituting a single root directory for the components of both of the file systems. Provino does not disclose or suggest this feature of claim 1. Instead, only the subdirectory 71(1) is mounted to the root directory, whereas the subdirectories 71(2) and 71(3) are mounted indirectly to the root directory. Even if the root directory of Provino is considered to be a single

mount point, the root directory of Provino is not a single mount point constituting a single root directory for the components of two file systems.

In addition, Provino does not disclose or suggest that any of the subdirectories, which are each a distinct remote physical file system file, in the directory tree 70 are mirrored with any other subdirectory. Instead, the hierarchically mounted subdirectories of Provino are independent from one another.

Accordingly, Applicant respectfully submits that Provino does not disclose or suggest means for mounting components of each of the two file systems on a single mount point constituting a single root directory for the components of both of the two file systems such that each mounted component of one of the two file systems is linked together with and becomes a mirroring pair with a corresponding mounted component in the other one of the two file systems, as recited in claim 1.

In addition, Provino does not disclose or suggest the application interface data structure of the mounted file systems. In particular, claim 1 recites that each of the two file systems has an application interface data structure constituting a programming interface for management thereof and access thereto. The "CHILD" and "SIBLING" pointers of Provino are physical pointers to a particular file system. However, in contrast to claim 1, they are not a programming interface for management of the file systems.

Similarly, Provino does not disclose or suggest that the root directory or subdirectory 71(1) includes a super application interface data structure containing an application interface data structure of the virtual file system, and the application interface data structures of each of the two file systems, as recited in claim 1.

Furthermore, Provino does not disclose or suggest that the directory tree 70 is a virtual file system configured to manage the linking and mirroring of the corresponding mounted components of each of the two file systems, as recited in claim 1. As demonstrated above, the components of each of the sub-directories, which are each a distinct remote physical file system, are independent from one another.

Accordingly, for at least the foregoing reasons, Applicant respectfully submits that Provino does not disclose or suggest all the recited features of claim 1.

Therefore, Applicant respectfully submits that claim 1, as well as claims 2, 3 and 7-9 which depend therefrom, are patentable over Provino.

**B. Independent Claim 4**

Claim 4 recites a method for mirroring files and directories between file systems on a computer system or on two computer systems connected to each other via a network.

The method of claim 4 comprises a step of mounting components of each of two file systems on a single mount point constituting a single root directory to create a virtual file system in which each mounted component of one of the two file systems is linked together with a corresponding component in the other one of the two file systems, where each of the mounted components is one of a directory and a file.

As demonstrated above, Provino does not disclose or suggest that components of any of the subdirectories are mounted on a single mount point constituting a single root directory. In addition, Provino does not disclose or suggest that a component of any of the subdirectories is linked with a corresponding component of another subdirectory.

Accordingly, Applicant respectfully submits that Provino does not disclose or suggest the mounting step recited in claim 4.

The method of claim 4 also comprises a step of configuring the virtual file system so that each component of the virtual file system has a super application interface data structure containing an application interface data structure of the component in the virtual file system, an application interface data structure of a linked component in the one of the two file systems, and an application interface data structure of the corresponding linked component in the other one of the two file systems. Claim 4 recites that the application interface data structure of the component in the virtual file system provides a mechanism for managing the component within the virtual file system and the corresponding linked components within the two file systems.

As demonstrated above, Provino does not disclose or suggest that the directory tree 70 or any of the subdirectories includes a super application interface data structure that contains an application interface data structure of the virtual file

system, and application data structures of the corresponding linked components, as recited in claim 4.

In addition, the method of claim 4 comprises a step of, upon receiving a request to perform a write operation on one of the mounted components, using the application interface data structure of the component in the virtual file system to perform the write operation on the linked component in the one of the two file systems and on the corresponding linked component in the other one of the two file systems in real time in response to the request.

In contrast to claim 4, Provino does not disclose or suggest that a write operation performed on one file in one subdirectory is also performed on any other file of another one of the subdirectories. On the contrary, each of the components within the directory tree 70 of Provino are independent from each other.

In particular, Provino discloses that a network file system client module 23 generates and transfers a write message to a remote computer system 11(n') or server computer 12, and in response, a remote computer system 11(n') or server computer 12 stores the write request in its storage device (see Column 13, lines 40-48). Applicant respectfully submits that Provino cannot perform the write operation recited in claim 4. This is because Provino can write data to no more than one remote file system, since no directory can have more than one file system mounted on it.

Accordingly, for at least the foregoing reasons, Applicant respectfully submits that Provino does not disclose or suggest all the recited features of claim 4.

Therefore, Applicant respectfully submits that claim 4, as well as claims 5, 6, 10 and 17 which depend therefrom, are patentable over Provino.

### **C. Independent Claim 11**

Claim 11 recites a mirrored file system comprising a first server having a first local file system and a first physical storage device associated therewith, and a second server having a second local file system and a second physical storage device associated therewith.

The mirrored file system of claim 11 also comprises a client device having a virtual file system which mounts an imported file system from the first server and an

imported file system from the second server on a single mount point constituting a single root directory to provide a single point of access for mounted components stored in each of the first and second local file systems, such that each mounted component in one of the first and second local file systems has a corresponding copy in the other one of the first and second local file systems.

As demonstrated above, Provino does not disclose or suggest that two file systems are mounted on a single mount point constituting a single root directory to provide a single point of access for the mounted components of the two file systems, as recited in claim 11.

In addition, Provino does not disclose or suggest that a component in one of the mounted subdirectories has a corresponding component in another one of the mounted subdirectories. Therefore, Applicant respectfully submits that Provino does not disclose or suggest that each mounted component in one of the first and second local file systems has a corresponding copy in the other one of the first and second local file systems, as recited in claim 11.

Accordingly, for at least the foregoing reasons, Applicant respectfully submits that Provino does not disclose or suggest all the recited features of claim 11.

Therefore, Applicant respectfully submits that claim 11, as well as claims 12-16 and 18 which depend therefrom, are patentable over Provino.

### **III. Rejections Under 35 U.S.C. § 103**

Dependent claims 9 and 14-16 were rejected under 35 U.S.C. §103(a) as unpatentable over Provino. As demonstrated above, Provino does not disclose or suggest each and every limitation of independent claims 1, 4 and 11. Consequently, Provino cannot disclose or suggest the limitations recited in claims 9 and 14-16 at least by virtue of their dependency from independent claims 4 and 11.

Therefore, for at least the foregoing reasons, Applicant respectfully submits that claims 1, 4 and 11, as well as claims 2, 3, 5-10 and 12-19 which depend therefrom, are patentable over Provino.

**IV. Conclusion**

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.


If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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